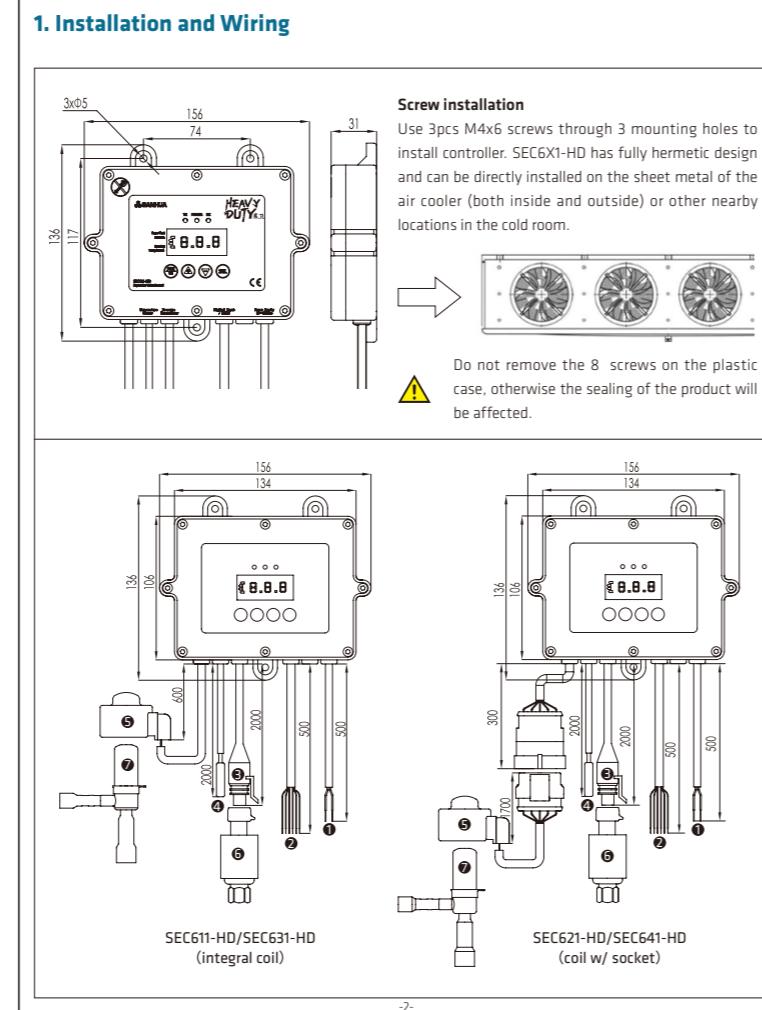




SEC6x1-HD EEV Controller Quick Installation Manual

II-SEC(HD)-MU-R2302

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No.	Print	Description	Function	Remarks	Cable Length (mm)		
					SEC611-HD/ SEC631-HD	SEC621-HD/ SEC641-HD	
①		Power Supply	L (Red)	220Vac (85Vac ~ 264Vac) 50/60Hz	500	500	
			N (Black)				
		Digital Input /RS485	START/STOP RUN (Grey)	Connect with GND	500	500	
			Defrost DEF (Yellow)	Connect with GND			
②		Digital Input	GND (Black)	① Connect with RUN, defrost signal to be a switch. ② Connect with 12Vdc to power the remote display.	500	500	
			B (Blue)	RS485 B- (TRX-)			
		RS485 Communication	A (Orange)	RS485 A+ (TRX+)	2000	2000	
			12Vdc (Red)	12Vdc output			
③		Pressure Transmitter	5Vdc (Red)	Power Supply	2000	2000	
			S1 (White)	Signal input			
		Temperature Sensor	GND (Black)	GND	2000	2000	
			T (Black)	/			
⑤	EEV	EEV Coil	12Vdc (Grey)	The unipolar electronic expansion valve coil is 5-wire.	600	2000	
			B (Black)	SEC611-HD/SEC631-HD: The coil is integrated with the controller ; SEC621-HD/SEC641-HD: Coil and controller connected by waterproof connector, with coil PQ-M24012-000071.			
			A (Yellow)				
			B (Red)				
			A (Orange)				

Notes:

1. Don't apply power before wiring is completed. If wiring change is needed, make sure the power is off.
2. The wiring of the power cord needs to be insulated and waterproof after completion, and it is recommended that the wiring be completed in a junction box (Figure 1) above IP65.
3. After the wiring of digital input and defrosting input good insulation and waterproof treatment are needed, the rest of the unused line is recommended to cut off the wire head (Figure 3) and good insulation and waterproof treatment to avoid short circuit, it is recommended in the IP65 or higher junction box (Figure 2) to complete the wiring.
4. Please refer to Figure 4 for passive connection method of start/stop and defrosting signal, and Figure 5 for active connection method
5. No. ⑥ Pressure transmitter (Packard connector) is included in this package. Please order No. ⑦ Electronic expansion valve body(unipolar) separately on demand.
6. The priority of the defrosting signal is higher than the start/stop signal; if you need to turn on the defrosting function, first turn on the start/stop signal and then turn on the defrosting signal.

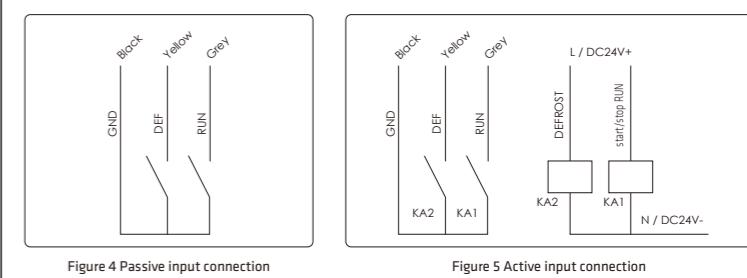
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Figure 1

Figure 2

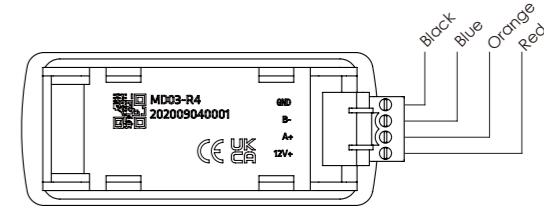
Figure 3



Remote display (optional) wiring diagram shown as above:

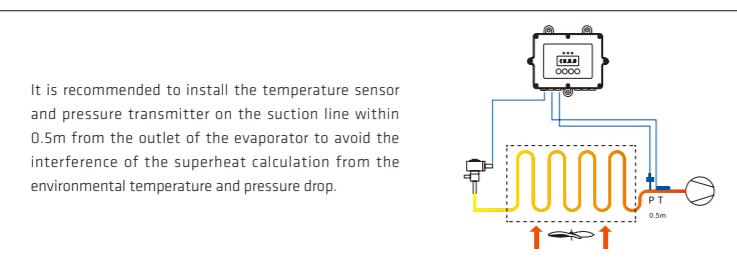
Dimension 84(W) × 36(H) × 19.4(D)mm
Hole size 71(W) × 30(H)mm

The communication cable between the remote display and the controller recommends a twisted pair shielded above 2P×24AWG.



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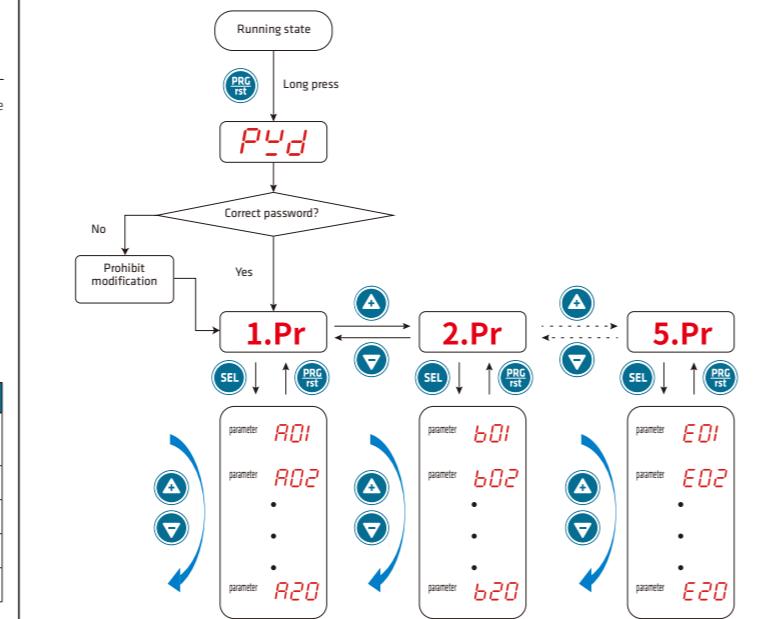
2. Button and operation

★ Default display current suction superheat SH: Press [+] or [-] to switch display content. After reading other real time data, it will automatically return to the "SH" display after 1 minute if no other key press.



Definition	Description
Button	Long press to enter to parameter setting mode or short press to return to previous level.
LED	LED on when communication is good.
LED	LED on when start/stop switch is on
LED	Add or pull up
LED	Reduce or pull down
SEL	LED on when defrost switch is on
SEL	LED on alarm or protection
SEL	Select and save

Definition	Description	Definition	Description
LED	°C /bar	LED	OPEN ↘ Display current EEV opening
	★ SH ↘ Display current suction superheat		TEMP ↘ Display suction temperature
	PRESS ↘ Display current evaporating pressure		SH ↘ + PRESS ↘ Display saturated temperature corresponding to suction pressure



- In the power-on state, Long press PRC RST for more than 3s, enter to parameter setting mode.
- When screen displays PUD, press SEL until screen shows 5 (default password), press SEL to enter to parameter list.
- c. IPr stands for parameter 1, press SEL to select 2Pr, 3Pr (switch parameter list).
- d. After selecting parameter list, press SEL to enter parameter list. If want to switch to other parameter list, press SEL to return to parameter list selection interface.
- e. After entering to parameter list, the panel directly displays parameter code, press SEL to switch among different codes.
- f. When the panel displays the parameter codes that should be modified, press SEL to directly modify parameters, press SEL to display next parameter or press SEL to return to previous parameter list.
- g. After all parameters are modified, long press SEL for 3s to save the settings, the digital pipe will show “--” for 1s and then automatically return to the normal operation interface.

Notes:

- If password is incorrect or no password is entered, it is allowed to review, but not allowed to modify the parameter.
- If password is correct and enter to parameter setting, the settings should be done in 10 minutes. After 10 minutes, you need to enter correct password to complete the settings again. If there is no any modification after entering to parameter setting, the interface will automatically exit to normal operation interface.

3. Main parameter settings

3.1 Controller mode selection

Holding Register Address (code)	Working mode	SETUP MODE	Description	Wire connection
56 (C16)	Controlling mode 1	1	• Valve manual operation mode • Control valve opening ratio by pressing SEL on the panel	
56 (C16)	Controlling mode 2	2	• Driving mode • Driving by external 1-5V analog signal	
56 (C16)	Controlling mode 3	3	• Temperature Control Mode • By setting the targeted temperature, the controller will receive the temperature sensor signal to control the valve opening to meet the targeted temperature.	

Notes:

1. Using use the manual operation/Driving mode, please make sure compressor start/stop signal RUN is ON.
2. Using driving mode, connect 1-5V external analog signal through pressure sensor port.



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3.2 Refrigerant selection

In parameter list 4.Pr

Holding Register Address	Code	Description	Default value	Range
61	d01	Refrigerant selection	14 (R744-CO2)	0 ~ 28
			0 (R22)	

Note: For SEC631-HD and SEC641-HD, default value of d01=14(R744). For SEC611-HD and SEC621-HD, default value of d01=0(R22).

There are a total of 29 refrigerants in the controller for selection

Code	Refrigerant								
0	R22	6	R1234ze	12	R449A	18	R23	24	R454C
1	R404A	7	R1234yf	13	R452A	19	R407A	25	R455A
2	R410A	8	R290	14	R744(CO2)	20	R407F	26	R454B
3	R134a	9	R450A	15	R744A(N20)	21	R124	27	R452B
4	R407C	10	R513A	16	R32	22	R717	28	R600a
5	R507	11	R448A	17	R245fa	23	R407H		

3.3 Reset to factory settings

Holding Register Address	Code	Description	Default value	Range
79	d19	Reset factory settings	0	0~999

Reset factory settings option is under 3.Pr menu. Under parameter setting status, press to find parameter d19, enter password or back up password 913 and click , the factory settings will be resetted, and the controller will run again.

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4. Parameter Table

4.1 Table1.Pr

Address	Description			Code	Unit	Interval	Min.	Max.	Default
0	Temperature / superheat setting value	A00	K	0.1	0.5	30.0	6.0		
2	initial opening degree	A02	%	1	0	100	70		
3	Initial opening durance time	A03	sec	1	0	600	30		
4	P: Proportional increase	A04	%	0.1	0.1	99.9	3.0		
5	I: Integral time	A05	sec	1	0	999	20		
6	D: Differential coefficient time	A06	sec	1	0	999	4		
7	Low superheat alarm mode	A07	0=N/A 1=Automatic reset			1			
8	Low superheat alarm value	A08	K	0.1	0.5	30.0	0.5		
9	Low superheat alarm delay time	A09	sec	1	1	300	15		
10	Cancel low superheat alarm	A10	K	0.1	1	30.5	3.0		
11	MoP Alarm Mode	A11	0=N/A 1=Automatic reset			1			
12	MoP Alarm Value	A12	bar	0.1	-1.0	50.0	9.0		
13	MoP Alarm Delay Time / Minute	A13	min	1	1	15	1		
14	Cancel MoP alarm	A14	bar	0.1	-1.0	50.0	8.0		
15	High superheat alarm mode	A15	0=N/A 1=Automatic reset			0			
16	High Superheat alarm value	A16	K	1	10	40	30		
17	High superheat alarm delay time/Minute	A17	min	1	1	600	3		
18	Cancel high superheat alarm	A18	K	1	7	37	27		
19	MoP valve closing ratio	A19	/	1	0	999	200		

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4.2 Table 2.Pr

Address	Description			Code	Unit	Interval	Min.	Max.	Default
20	Anti-freezing alarm mode	b00	0=N/A 1=Automatic Reset			1			
21	Anti-freezing alarm value	b01	°C	1	-40	40	0		
22	Anti-freezing alarm delay time/second	b02	sec	1	5	200	30		
23	Cancel anti-freezing alarm	b03	°C	1	-37	43	3		
24	Select pumpdown and delay time (Reserved)	b04	sec	1	-1	180	-1		
25	Pressure setting point to stop pumping down (Reserved)	b05	bar	0.1	-0.5	18.0	0.5		
26	Low pressure alarm mode	b06	0=N/A 1=Automatic Reset			0			
27	Low pressure alarm value	b07	bar	0.1	-0.8	17.7	0		
28	Low pressure alarm delay time / second	b08	sec	1	5	200	5		
29	Remove low pressure alarm	b09	bar	0.1	-0.5	18.0	0.3		

Address	Description	Code	Unit	Interval	Min.	Max.	Default
51	EEV opening when sensor fails	C11	%	1	0	100	50
52	Defrosting signal control enabled	C12	0=Disabled 1=Enabled			0	
55	start/stop signal control enabled	C15	0=Disabled 1=Enabled			0	
56	Controlling Mode (Shall power restart)	C16	0=Automatic superheat control 1=EEV Manual operation 2=Driving Mode 3=Temperature Controlling Mode			0	
57	Defrosting Control Mode	C17	0=external signal 1=Communication control			0	

- 1) Because max. controller displayed value is 999, so EEV total steps value 50 means 500 steps.
- 2) EEV exciting speed 10(0)=10PPS ; 20(1)=20PPS ; 30(2)=30PPS ; 50(3)=50PPS ; 80(4)=80PPS ; 100(5)=100PPS ; 200(6)=200PPS ; 250(7)=250PPS ; 500(8)=500PPS;
- 3) Address 51 EEV opening when sensor fails refers to the temperature sensor and pressure transducer.
- 4) Address 52 defrosting signal control shall combine with Address 57 defrost controlling mode to get enabled
- 5) Address 55 start/stop signal shall combine with Address 76 start/stop controlling mode to get enabled.

4.4 Table 4.Pr

Holding Register Address	Description	Code	Unit	Interval	Min.	Max.	Default
61	Refrigerant ¹	d01	/	1	0	28	0 14
62	Max. Pressure transmitter value ²	d02	bar	1	-1	99	20 60
63	Min. pressure transmitter value ²	d03	bar	1	-1	99	-1 0
64	Pressure transmitter offset correction	d04	bar	0.1	-9.9	9.9	0
65	Temperature sensor offset correction	d05	°C	0.1	-19.9	19.9	0
66	Password	d06	/	1	0	999	5
69	EEV max. opening percentage	d09	%	1	0	100	100

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Holding Register Address	Description	Code	Unit	Interval	Min.	Max.	Default
70	EEV min. opening percentage	d10	%	1	0	100	0
71	Sensor(pressure and temperature) input filtering time	d11	sec	0.1	1.0	99.9	1.0
72	Forced EEV opening ratio	d12	%	0.1	-1(OFF)	100.0	-1(OFF)
75	Display Mode	d15	0= Alternatively Display 1=Superheat 2=Evaporator outlet pressure 3=Expansion valve opening 4=Evaporator outlet temperature 5=Saturated temperature			0	
76	start/stop mode	d16	0=Normally open 1=start/stop signal control 2=Communication signal control			1	
77	MODBUS ID setting	d17	/	1	1	128	1
78	Communication settings, baud rate, check bit, stop bit (Shall power restart)	d18	0=4800,NONE,1 1=9600,NONE,1 2=19200,NONE,1 3=38400,NONE,1 4=4800,NONE,2 5=9600,NONE,2 6=19200,NONE,2 7=38400,NONE,2 8=4800,EVEN,1 9=9600,EVEN,1 10=19200,EVEN,1 11=38400,EVEN,1 12=4800,EVEN,2				